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ON THE STRENGTH OF SILVER SOLUTIONS FOR POSITIVE PRINTING.

BY J. T. TAYLOR.

The problem desired to be solved at present is this—if a good—nay, a first-class—print can be obtained by sensitising paper on a silver bath of 20 grains to the ounce, is there any good reason why photographic amateurs should use a bath of 100 grains, as many of them do?

Some statistics which were a short time ago given to the world showed that, in printing operations, as commonly conducted, only about five per cent. of the silver employed went really to form the image, the remaining 95 parts being removed from the paper by the subsequent washings and fixing solution.

The first thing to consider is the conditions requisite for taking a print. These are, in rough terms, a layer of chloride of silver on the surface of the paper with a further addition of nitrate of silver. Albumenised papers are usually prepared with a solution of a chloride salt of from five to ten grains to the ounce. I am aware of one extensive manufacturer who employs nothing but a solution of common salt of six grains to the ounce. Now, as the eqvivalent or combining proportion of chloride of sodium is 58·5, and that of nitrate of silver is 170, it follows that a solution of nitrate of silver of 17 grains to the ounce of water should be sufficient to effect the decomposition of the chloride of sodium on the surface of this paper, the rest of the silver over and above this quantity being left on the surface as free nitrate of silver. The precise quantity of free nitrate which should be left on the surface

is what no one seems able to tell. Some say it is best attained by floating the paper over a silver bath of 100 grains to the ounce; others recommend 80 as the maximum; thousands of operators never dream of exceeding 60; and some few are found who think no good end is served by exceeding 20 grains to the ounce. Now in a case of this kind, whatever theory and custom may say on the subject, it will be very desirable to bring some facts to bear on it, which I accordingly now proceed to do.

A large portrait of Mr. Moncrieff, the Lord-Advocate of Scotland, was some two or three years ago exhibited at the Manchester Exhibition. The size of the portrait was large (12 inches,) and its force and brilliancy were remarkable. The art-critic of *The British Journal of Photography* pronounced it the best portrait in the Exibition. It was photographed by Mr. M'Glashon, of Edinburgh, and the strength of the printing bath employed was 20 grains to the ounce. More recently, a similar large picture by the same artist was awarded the medal of the Photographic Society of Scotland, as being the best portrait in its Exhibition. This picture, too, was characterised by all the excellencies one usually wishes to find in a photograph. In a notice of the Exhibition, the art-critic in this Journal pointed out the merits of this and the other pictures of Mr. M'Glashon—an opinion afterwards endorsed by the award of the Judges of the Exhibition. All Mr. M'Glashon's pictures in that Exhibition were sensitised on a twenty-grain bath.

Some time ago a writer in an American journal stated that, by the introduction of nitrate of ammonia into the printing bath, it acquired the valuable property of producing vigorous prints when its strength had been so far wasted as to leave but about 15 or 16 grains to the ounce. One of his experiments consisted in making a very strong silver bath with the addition of the nitrate of ammonia, and exhausting it by use until it reached the low strength just alluded to. I believe he found general equality of result.

If, then, good pictures may be obtained by a twenty-grain bath, why use one any stronger? I speak just now more especially to amateurs whose printing operations are not of sufficient magnitude to encourage them in the preservation and reduction of their washings, and whose photographic amusements in consequence are rendered of a much more expensive nature than is necessary. With professionals it is of less consequence, for in a properly-

conducted photographic establishment it is possible, as was previously stated, to recover no less than ninety-five out of every hundred ounces of silver used; such, at least, has been stated by excellent authority. But to amateurs who "canna be fashed" to recover their silver, the loss is a serious one. Much information on the subject has been kindly given me by Mr. M'Glashon, with permission to lay the same before the readers of this Journal if I felt so inclined; and taking advantage of this, I at once give, as a formula for a sensitising bath, the following :—

Nitrate of soda.....	40 grains.
Nitrate of silver	20 "
Distilled water.....	1 ounce.

Float ordinary albumenised paper for about three minutes. It is not necessary to overprint to the same extent as with the usual strong bath; and with ordinary care and skill as much richness and depth are obtained as from a bath of ten to twenty per cent.

In comparison with the strong bath, the weak one has both advantages and disadvantages. The disadvantages are—or rather the single disadvantage is—that it takes longer to print; but, to counterbalance this, papers so sensitised will *keep* much longer, and from a hard negative will produce a more perfect impression. Experimenting with this, two baths were prepared—one a ninety grain one, the other only twenty, as above. The ordinary albumenised paper of the shops was employed, and, when excited each was exposed under the same negative. With the exception that the weak bath paper was somewhat slower in printing, the pictures when toned and fixed were in every respect alike, the one possessing as much brilliancy and depth as the other. In respect of keeping qualities the weak one showed a decided advantage; for on the evening of the second day of its preparation it scarcely showed perceptible evidences of decomposition, while the stronger one had become very sadly discolored.

This keeping property confers another advantage than the first and most obvious one of being able to keep paper sensitive so as to use it when one has a spare hour—it enables a very prolonged exposure to be given in a dull light, the only way by which a hard patchy negative can be made to give a print at all presentable. The toning bath may either be an acetate one, a carbonate one, or preferable a mixture of both.

What part the nitrate of soda plays in the solution remains a subject for future consideration.

It is a fact well known that the albumenous varnish on a sheet of paper is coagulated by the nitrate of silver bath simultaneously with its being rendered sensitive. The less of this salt there is in the solution the greater the chance of the albumen being dissolved off, and the resulting picture left without vigor. Does, then, the presence of the nitrates of ammonia or soda increase the power of the silver in the coagulation of albumen? Surely it must; although I find that a solution of nitrate of soda by itself, even when used in a concentrated form, has no effect whatever in arresting the tendency of the film to be thoroughly washed off when subsequently exposed to the action of water. By subjecting the paper to the action of hot steam previous to its being excited, it has been found that coagulation has been effected so thoroughly as to greatly increase the brilliancy of the resulting pictures, and I think it possible that this method of treatment may yet, when its details are better known, be extensively adopted; and if so, the thanks of photographers will be due to Mr. Wood, who, I believe, was the first to call attention to it. It would be desirable were he to continue his experiments in this direction, and publish the results.

At a photographic meeting some time ago a gentleman stated that it was impossible that steam could render dried albumen insoluble, as he had subjected a sheet of paper to the action of a jet of steam issuing from a high pressure boiler with no other result than that of dissolving it all off the paper. Now this result is only what might have been expected; for, as many are aware, the steam issuing from a boiler at high pressure is not hot—at least it will not scald the hand—and cannot in this respect bear comparison with the steam issuing from an ordinary tea kettle. Hot steam and steam issuing from a high-pressure boiler are quite different, and applied to the coagulation of dessicated albumen will produce results quite at variance with each other.—*Brit. Journ. of Phot.*

Optical Illusions.—Is there any more wonderful illusion than that of an ordinary plane mirror? If we should now see one for the first time how incomprehensible and admirable would be its truthful reflections!

DR. HENRY DRAPER'S TELESCOPE AND PHOTOGRAPHS OF THE MOON.

(Read before the American Photographical Society, October 12th, 1863.)

In the Autumn of 1858 I determined to make the largest reflecting telescope in America. Its construction, together with the various improvements successively added, has occupied me up to the present time, more than five years. The instrument, which is nearly sixteen inches in aperture and thirteen feet in focal length, was intended to be devoted to celestial photography, and consequently contains many novelties fitting it for that purpose. A description of it was read at the Oxford meeting of the British Association in 1860. It has since then been completed, and has now the largest silvered reflector of any instrument in the world, except that in the Imperial Observatory at Paris. The Smithsonian Institute is preparing to publish shortly a full account of it, which will contain the entire detail of construction.

The Reflector.—The reflecting telescope is greatly superior to the achromatic for photographic purposes. In my instrument a movement of the sensitised plate, one-hundredth of an inch on either side of the true focus, visibly injures the image. In the great achromatic at Cambridge, on the contrary, the position of the plate may be varied over an inch without any noticeable change. The difference is simply that while by reflection the visual and chemical rays both converge to the same focus, by refraction they do not. A sensitive plate put where the eye sees the image sharp, produces a fine result in a reflecting telescope, but does not in an achromatic. Besides this, more light is reflected by a large silver mirror than an achromatic of equal size can transmit.

At first I used speculum metal for my mirrors, but abandoned it at Sir John Herschell's suggestion in favor of silvered glass, the reflecting power of the latter being ninety-three per cent., while that of the former is at the best but seventy-five per cent. The glass mirror too weighs not more than one-eighth as much as the metal one, the one being 16 pounds the other 128 pounds. It is also greatly more permanent, for if the silver coating which covers the glass concave should by chance be injured, it can be dissolved off easily with nitric acid, and the mirror resilvered in an afternoon, and this be repeated indefinitely. A person making such a silvered eflector is content then to take the greatest pains to produce a

glass concave of the utmost perfection, for once that is obtained it need never be lost. The thin sheet of silver deposited upon it, only $\frac{1}{200\,000}$ of an inch thick, copies with the last degree of accuracy the glass beneath, and does not modify the figure of the surface, but only increases the reflecting power from two to three per cent. up to ninety. This silver coating is transparent, and shows bright objects, such as the sun, of a light blue tint by transmitted light.

As regards the degree of excellence that can be reached by such telescopes, I can only say that mine can show every object that other instruments of similar size do, and more too. I can see the fifth component of *Debillisima*, which is the *minimum visible* in Lassel's two feet speculum, and the eighteenth magnitude pair near B Capricorni, discovered by Herschell's $18\frac{1}{2}$ inch speculum. These demonstrate the light collecting power of such a silver surface. Of tests for sharpness of definition, it will separate the blue component of Andromedæ with a power of 400, and the instrument on a favorable night will bear three times that power.

It must not be supposed however that so excellent a result was obtained without labor. I have ground and polished more than a hundred mirrors of sizes ranging from nineteen inches to one-quarter of an inch in diameter. This has involved the construction of several distinct polishing machines, the earlier framed on foreign works, the latter original. Some of the large mirrors have also been polished and corrected for spherical aberration by hand.

The Mounting.—The mirror is sustained in a walnut tube, hooped with brass, and supported in a frame which holds the tube at both ends. This is to avoid the tremulous motion so common in large instruments. The eyepiece, or what is the same thing, the place of the photographic plate, is stationary at all altitudes, and an observer has never to strain himself by awkward positions but always looks straight forward. When photographs of the moon are being taken, the telescope is not driven by clock-work, but is allowed to come to complete rest. The sensitive plate alone is moved in a direction and at a rate to correspond with her motion. The difference is, that instead of having to carry more than half a ton, the clock has only one ounce to move. Of course there is no comparison between the precision of movement possible in the two cases.

The Clock is a clepsydra of peculiar construction, and has no wheelwork of any kind about it. It is free, therefore, from all irregularities produced by teeth, and also from those caused by the oscillating movement of a pendulum.

The Observatory—at Hastings, Westchester county—is a building twenty feet square and twenty-two feet high, and is one half excavated out of the solid rock, so as to keep the reflector at an uniform low temperature, and at the same time give steadiness and immovability to the telescope. It stands on a hill, two hundred and fifty feet above the level of the sea, and in consequence escapes much of the fog which accumulates in the valleys around, and frequently in the cold part of the night, fills them nearly full.

The Dome, which covers the building, is sixteen feet in diameter and is supported on a point at its centre, instead of on rollers or cannon balls around the edge, as is usual. It is of course moved with much more ease, and so far from requiring complicated wheelwork, can be turned around by a gentle pressure with the hand.

The entire management of the telescope is conducted from an observing chair which follows the telescope. The instrument can be directed to an object, the same shifted, and the observer himself moved to any desired part of the building by means within immediate reach, and which only require slight exertion.

The Photographic Laboratory is attached to the Observatory on the western side, only a few feet intervening between the telescope and developing sink. It contains all the requisite convenience for taking photographs up to three feet in diameter, and is furnished with a tank which holds a ton of rain water. This supply is procured from the roof of the buildings, which are on this account painted with a stone paint, so as not to contaminate the water. Whenever an inch of rain falls I can collect the tank full. The total amount that can be secured in a year is about forty tuns

The Photographs.—The instrument has been in working order for eighteen months, but a large part of the time has been unused because of my absence with the 12th Regiment, in Virginia, and on account of the duties of the natural science professorship in the University.

With my father's (Prof. J. W. Draper) assistance, I have, however, taken some very fine photographs during the past summer. Changes have been made in the photographic processes commonly

used, in order to fit the pictures for bearing high magnifiying powers. I have negatives which can be enlarged by a power of 32 without showing granulation or other defects to an offensive degree.

The photograph before you is nearly two feet in diameter, and is magnified to 210 times the size of the moon as seen by the naked eye. It is the largest that has ever been made. I have now another however still larger in my observatory, nearly three in diameter, made under a power of 320. It represents the moon on a scale of seventy miles to the inch. In the picture before you attention should be directed particularly to the Appenine range, Cospernicus with his reflecting streams, the great grove from Tycho, the numerous craters with an internal cone, the irregularities visible in the bottom of the Mare Imbrium. But it is useless to particularize, there is an almost inexhaustible supply of objects for study and admiration.

The Society will see that although celestial photography may be as yet only in its infancy, it is rapidly advancing. Every day is giving origin to improvements, and even now the limit of size in these pictures is rather owing to the great expense and difficulty of working such enormous plates, than to any intrinsic defect of the images to be copied.

CHILDREN'S PICTURES.

I AM an amateur in photography in a small way, and read the Journal, of course. Many a difficulty have I mastered by its aid. But now help is wanted, not for me alone, but for a suffering profession. Hear the case.

Convenient to me is the thriving town of B., which boasts of three photogrgphers. Good fellows, all of them, know a thing or two, and can take a hint or a picture in reasonable time. When in town, I always look in upon them to chat a little on art matters and compare our work.

A few days since I walked in friend A's pleasant rooms. A, is a spruce young laddie, very civil and obliging, and always balmy as a May morning to his lady customers, I found him in his dark room, rather nervous. "Fact is, Sam, I have about a dozen babies,

more or less, to take this morning", and an occasional squall from the reception room confirmed his words. A. urged me to stay a little while, and I staid.

Baby No. 1 came in accompanied by Pa, who carried the baby, Ma, who did the baby talk and a plenty of it, and two small sisters who capered and crowed to amuse the darling. Excepting that the baby's head wouldn't keep up any way, and that he would suck his thumb, or cry if that favor was denied him, he wasn't a bad sitter. But these trifling drawbacks consumed an hour or so, and baby was only caught at last when in the act of dropping to sleep, his head held up by hand and the countenance decidedly puttyish. Ma was dissatisfied, but Pa was in a hurry, and A. strained his conscience affirming that the picture was very good. After some vain attempts to beat down prices, the party left, making room for an interesting pair of twins, whereon I fled despairingly.

Friend B, is a man of few words, and those brief, like Pat.'s owl, 'he kapes up a dale a' thinkin'. I found him trying to take a family group, consisting of a mother, a spoiled three year old boy, and a six months baby. My friend's countenance was an artistic study and expressed a variety of contending emotions, prominent among which I could read a desire to shake the spoiled boy and free his mind to his mother, while a desire to get a customer was fighting hard with his honest indignation. After waiting for half an hour in vain, I left him in his dark closet preparing his ninth plate, and growling something about the malignant abuse of Herod for the slaughter of the innocents.

Friend C. is a bachelor of the most-straitest sect. Babies and baby talk are to him an abomination. He is in dress movements and conversation a model of sedate propriety. Judge of my surprise when on entering his room and peering cautiously around the screen, I beheld him shaking a child's rattle with might and main, and trying at the same time to whistle 'Pop goes the weasel, with variations. At last off went the cover, but the whistle and rattle ceased and the baby threw back its head and bellowed Mother hush-a-byed, and C. with a look of desperate resignation prepared another plate, and resumed his musical labors, but baby refused to attend, and as I fancied, winked precociously out of his right eye as if he liked to see the fun. "Can't you try something else, Mr. C.," said the anxious parent, and C. after profound meditation, rushed into the closet, extemporised a drum out of a gutta

percha 4-4 bath, and by energetic thumping succeeded in fixing the infant's attention. Cautiously he uncovered, and warned by previous experience, he redoubled his musical exertions, accompanying them with a kind of war whoop and scalp dance which would have done credit to any of Barnum's Winnebagoes. The result I am happy to say was a very faint picture of a very much astonished urchin with eyes like saucers, but there was a picture, and C. sat down exhausted. I offered some ironical congratulations upon his success, but he was too deeply touched. More in sorrow than in anger he waived the subject, solemnly averring that such labors as these just reported were wearing out his very existence, and conjuring me to write the truth above him as an epitaph—

"Died of children's pictures."

Mr. Editor, what is the remedy? Can't a law be passed that children too small or too ill managed to be spanked into quiet, shall be excluded from operating rooms?

Failing in that, can the Indian fashion of strapping infants to boards, so as to preclude all motions except winking, be made popular? Astonishing babies multiply upon us, and unless a remedy is found, worthy photographers will be cut off by untimely fate. Tell us, O Nestor of photographers, what's to be done about it? B.

New York, Oct. 20th.

PRINTING WITHOUT SILVER SALTS.

BY M. MC-A GAUDIN.

A process for the production of positive proofs without the employment of a silver bath has long been a desideratum. This was especially the case during the panic which prevailed on the discovery of the incessant and deplorable fading of silvered proofs, which were deemed most permanent. Since then the exclusive use of gold and platinum as toning agents has dissipated the fears once entertained, although the result has been a surfeit of manipulations and expenses, while we have not yet succeeded in preventing the yellowing of the whites by lapse of time when albumenised paper is used, which invariably retains an unstable compound of silver. It is on this account that those processes which exclude

the silver bath are again brought under discussion, and everything leads to the belief that it will end in their being largely introduced into practice.

These processes are founded on the insolubility of certain organic matters—gelatine, gum, &c.,—when they have been submitted to the action of light, together with an alkaline bichromate. This process has hitherto admitted of the formation of unalterable photographic images of every color by incorporating therewith, before exposure to light under the negative, various powders composed of carbon or metallic oxides, which being calcined, when the powders are ceramic, on enamel or porcelain, become united therewith by the action of the fire, and produce imperishable images.

To apply this to the printing of positives. The process offers some latitude, inasmuch as, if it be desired to diminish as much as possible the time of exposure, a film of gelatine rendered perfectly black by the introduction of lampblack, or other black substance, in impalpable powder, admits of the production after a simple washing of the most beautiful results. This latitude results from the employment of a salt of iron, which is toned black after exposure by means of gallic acid, in such a manner that the blacks are of the same nature as writing ink, and possess the same durability.

M. Emile Rousseau has been the first to discover a complete process of this kind which produces magnificently-toned proofs, which I propose to examine more at leisure. All the salts of iron are equally suitable for mixing with the bichromate: it is especially important that they should not produce any precipitate by their admixture previous to exposure. Without this, when the gallic acid is added, all will become black at once. He has ascertained that the *percitrate of iron* united with bichromate and gum completely fulfills this requirement. After an exposure, less certainly than with the salts of silver, the image at first reddish yellow, after rapid washing with common water, becomes immediately a beautiful black, on being allowed to digest in a weak gallic acid bath. It is possible to obtain at pleasure all the tones, from violet red to the most intense black, by adopting certain arrangements which I shall indicate with proportions in the next number.

It only remains for me to say that this process has been patented by M. Naissant for these five or six years. This will not, however, prevent amateurs from using it as they may require; but, should it be done to make a commercial application of it, it will be necessary to obtain a license from the patentee, in order to avoid prosecution for infringement of patent.—*La Lumiere.*

THE MICROGRAPH.

BY COL. NICHOLAS PIKE.

(Read before the American Photographical Society, October 12th, 1863.)

These minute and beautiful pictures are truly wonderful specimens of art. It is only a few years since they were introduced to the photographic public. M. Dagon, of Paris, we believe was the first to make them successfully. We have seen of his productions a number of portraits in miniature grouped together on the same plate covering a space altogether no larger than a pin's head, though the features of each portrait were delineated with all the accuracy of the ordinary photograph.

We regret to see that there has been indicated in this field of inquiry a spirit of monopoly and secresy injurious to science and totally at variance with the liberal and unselfish spirit which has hitherto marked (to his honor be it spoken) the student of nature. Having been very successful in making these pictures, I will give as briefly as possible the formula and a description of the instrument by which they are made. First, a camera box should be constructed about two feet long and six inches square, mounted on a strong adjustable stand; this camera box should have three openings across the top for the slide or holder of the picture to be produced each opening arranged so as to admit three different size pictures. The first opening should be eleven inches, second, fifteen inches, and the third nineteen inches from the back of the camera. The end of the camera holding the slide of the plate upon which the picture is to be taken should be covered with a square piece of thin board fitting tightly in a groove, in the centre of which is a small aperture about one-sixteenth of an inch in diameter; on the inner side of this board is fastened a tube or socket about an inch long, into which the lens tube fits and slides the aperture being in a line with its focus. To place and adjus

the lens tube, a small door is made on one side near the end of the box. The end of the camera carrying the sensitised plate is moved with a very nice adjustment of a rack and pinion. The plate holder is arranged with a hook or pin which corresponds with a series of holes in a brass plate on the top of the camera; these are termed indicators; the slide is held in its place by a spring arranged on the bottom and end of the box. After the size of the photograph is determined upon, the focus is adjusted by the aid of a microscope; the ordiuary inch power is all that is required for this purpose, both instruments, microscope and camera, should be placed perfectly level. The glass used tc focus upon should be a microscopic glass such as are used to mount microscopic objects, but it should be prepared in the following manner: first, dissolve gum dammar in alcohol by heat; let this solution become cold, when it will be found to have deposited part of the gum insoluble in alcohol, the clear solution is to be poured off and mixed, then add as much alcohol as upon trial will give (when dry) the strength of opacity required.

For Micrographs I have found this to answer admirably, and much better than a plain glass scratched with a diamond.

The solution should be applied to the glass plate in the same manner as you apply collodion. This glass is placed directly against the openings in the diaphragm, and the object glass of the microscope is brought against it, the correct focus is then obtained by the rack and pinion movement of the camera. It is always best to have the light of a bright blue sky reflected on the negative which is placed on the slide in the opening, as the action of the light on the collodion surface is more uniform than when artificial or oblique rays of light are employed. The glass used for the picture is a very thin microscopic glass English of make, the plates are three inches in length by one in width; large plates could be used, but it is not necessary, for upon one of these plates sixty-four pictures have been made.

The collodion which is the most suitable is made as follows:—

Alcohol	2 ounces.
Ether, sulph	2 "
Iodide of potassium	27 grains.
Bromide of cadmium	11 "

I first grind to an impalpable powder the iodide of potassium, then add the alcohol, triturate the whole until the potassium is all

dissolved, then add the bromide of cadmium, and when this is dissolved add the sulphuric ether and pyroxyline enough to make it the consistency of old collodion, then add 1½ ounces of Atwood's alcohol, shake it well, and let it stand a week or ten days; syphon it off into the collodion vial, and it is ready for use. The pyroxyline should be of the powdery kind and made at a high temperature of the acids; it is well to make it expressly for this purpose. If the collodion is made properly it will give a structureless film, and answers admirably. The silver bath used, should be forty grains to the ounce, and acidified with nitric acid, about two drops of the latterto one oz. of the former; the exposure varies according to circumstances, which the operator must determine by practice alone. The pictures are developed with the ordinary iron developer and fixed with cyanide of potassium, well washed and dried, and they are then ready for mounting; they should then be cut into small squares and mounted in a glass cylinder about one-eigth of an inch in diameter, one end of the cylinder is plain and to this the photograph is cemented with Canada balsam similar to the manner in which nicroscopic objects are mounted, the opposite end of the cylinder is ground convex, making it a magnifying lens, when the balsam is dry the glass is trimmed with a pencil diamond, they are then ready to be enclosed in an ivory tube manufactured and sold by Charles Alt, Optician, Broadway, New York. The glasses can be manufactured from glass rod sold for the purpose, by cutting them the proper length and melting the end of the cylinder with a burning lens; the heat of a burning lens is uniform and there are no injurious products of combustion as when a flame is employed. Mr. Fitz of this city, the celebrated telescope manufacturer, has employed the burning lens with marked success. They are also made with a grinding tool—a diamond made concave which is mounted and revolved under water, and the glass rod is pressed against it. These lenses may, however, be furnished by most any of the Opticians in New York. The camera I used was invented and manufactured by the enterprising firm of John Stock & Co., to whom I cheerfully recommend all amateurs like myself, as well as the profession, who may wish to try their hand at this beautiful branch of photography. The lens was manufactured expressly for the purpose by Mr. Fitz, No. 29 East 11th street, and is constructed on an entirely new principle. This gentleman will shortly introduce them to the public.

THE AMERICAN PHOTOGRAPHICAL SOCIETY.

FIFTIEH MEETING.

The Society held its first meeting after vacation on Monday evening, Oct. 12th, in the University Chapel; the president, Prof. Draper, in the Chair; Mr. O. G. Mason was appointed Secretary *pro tem.* There was a full attendance of members.

The chairman mentioned that a work which was really exhaustive on the subject of photography, and of great merit, had been presented to the society by its author, Dr. Van Monckhoven, of Paris : it was entitled *Traite General de Photographie.*

On motion of Prof. Seely, a vote of thanks was given to Dr. Van Monckhoven.

Mr. Tillman remarked that as yet they had no place, belonging to the society, wherein to keep the many things presented to it, their president had hitherto kindly taken charge of them; and he now moved that Prof. Draper be requested to act as custodian of the society, which was carried.

A Photometer.—A letter was read from Mr. Geo. W. Everett, of this city, calling attention to an instrument of his own invention for measuring the intensity of light He claims that it measures, by an index hand, every gradation of light, from sunlight to darkness, and can be used as well out of doors as in a dark room.

Inasmuch as the instrument was not exhibited, the society was not able to pass any opinion upon its merits; and the secretary was directed to write to Mr. Everett, expressing their interest in the subject, and requesting him to exhibit the instrument at his earliest convenience.

Celestial Photography.—Dr. Henry Draper read the paper, re produced on page 197. The paper was illustrated by a mammoth photograph of the moon.

Mr. Rutherford said he would only rise for a moment to give his testimony to the exceeding excellence and remarkable success of the photograph presented. He considered himself some judge of the matter, having been engaged in photographing the moon since 1857, with more or less results; and his experience taught him that it was one of the most difficult things that could be attempted, because it involved the union of so many conditions on the same

point and on the same occasion, before a fine result such as this could be obtained. In the first place, you must have a large, fine instrument. The instrument here used was a work of great ingenuity, patience and skill, and Prof. Draper, in making it, had not only accomplished the photographic result before them, but had constructed a telescope of great power for astronomical purposes. Next, there must be the cleanest and most rapid application of photography, and then a very true and exact motion of the plate. They might well congratulate themselves that one of their own members, with instruments made by himself, had been so successful in producing the remarkable piece of excellence exhibited.

Effects of Light.—Mr. JOHN JOHNSON said it had been suggested to him, some time since, whether equal times gave equal photographic effects; and he exhibited some specimens produced by an ingenious contrivance. tending to show the negative of the proposition. There were also shown some interesting experiments on the different shades produced by various colored glasses, exhibiting all grades of action from extreme dark to none at all.

Influence of Light on the Growth of Plants, through colored media.—Mr. JOHN JOHNSON read a paper, giving the result of experiments on this subject, made during the summer. (see p. 209.)

The PRESIDENT said that Mr. Johnson had directed their attention to two very interesting points, to which he would briefly refer. The first was, is the germinating or sprouting of seeds influenced at all by the color of light that happens to fall on them? That is, will seed germinate better under violet, yellow, or blue? He has disposed of that, and I think, correctly. Indeed when you come to look at the matter, every one must be convinced that light, in so far as its color is concerned, has little or nothing to do with the germination of a seed. The simple fact that we place seed under a layer of earth is tantamount to an exclusion of the light. The seeds germinate in the darkness, and the light has nothing to do with it. The second point is, what are the conditions when the plants are fairly growing? Does one kind of light prove to be more favorable to the development and growth of a plant than another? The experiments made settle that question (if it needed settling) in the most satisfactory way. Some kinds of colored light are far more favorable to the growth of plants than others.

In the book of Prof. Monckhoven, presented this evening, there is the strangest mistake; he affirms that it isthe actinic light, (*i. e.*, the violet rays) which operates best in developing growth. Such is not the fact. It is light not actinic at all—orange, yellow and green rays—which promotes the growth of plants; the violet in the experiments I made seemed to have no action whatever; the plants turned white, looked sickly in appearance, and very soon died. But it was very different with those growing under orange, yellow and green rays.

Preserving Plates.—Mr. C. W. Hull produced a large sized photograph taken from a tannin plate eighteen months old before exposure.

Col. Pike and other members made some remarks showing the advantage of the dry process in preserving plates. A great deal depended upon thoroughly washing the plates.

Some observations were made on micro-photographs, which Mr. Rutherford characterized as mere toys, and hardly worth the trouble of mounting, after all your labor.

New Members.—W. H. Gilder, H. J. Newton, H. L. Boltwood, Wm. Vollmer, and A. Bogardus, acting members. Prof. John Towler, of Geneva, N. Y., a corre-ponding member.

Adjournment.—The Society adjourned to the second Monday in November.

MR. JOHN JOHNSON'S PAPER ON THE EFFECT OF COLORED LIGHT ON THE GERMINATION OF SEEDS, AND THE GROWTH OF PLANTS.

The elaborate experiments of Mr. Johnson were undertaken on the occasion of a misstatement of the effect of light in a scientific periodical of recent date. He was greatly assisted in the work by Col. Nicholas Pike of Brooklyn, at whose residence the trials were carried on; also the manufacturers of stained glass in the vicinity generously contributed samples of the various colored glasses.

Carefully selected seeds of small plants were planted in conservatories of colored glasses, and the progress of growth was constantly watched. Great care was taken that all the conditions of growth except that of the colored light should be the same in all these

conservatories. Dally observations including tests with the thermometer, were made almost daily, and a record kept. The experiments occupied a good part of the summer.

The paper read by Mr. Johnson before the Society, on the 12th inst., was amply illustrated by photographs, colored glasses, the conservatories, &c. The paper was a long one, and comprehended many details which could only be made plain by a comparison with the illustrations, and for this reason, a publication in this Journal would not do justice to it. The paper will be preserved in the archives of the Society. The more important conclusions are set forth in the remarks of the president, which may be found in the proceedings of the Society.

Mr. Johnson promises to continue his experiments in a somewhat new direction.

A SOUTH SKYLIGHT.

Mr. Editor—I am thankful for the opinion in the last number of the Journal in regard to skylights; they are just my views and I feel my confidence strengthened in them since I have the judgment of others coinciding with me. I have been cursed with a northern light ever since I have been in the business of photography. Last Spring I removed to the building I now occupy, the second floor of which I fitted up expressly for a gallery. The house fronts the street, facing south; the roof sloping northward as given in the rough sketch accompanying this. Of course I put the skylight in the north end of the roof, as every photographer I consulted advised me to "put it there," as the "northern light" was the best! The dimensions of the skylight are 12 × 9 feet, coming down within 4½ feet of the floor in the north end of the room, and about 14 feet high at the highest point from the floor. This gives me a good light as long as old Sol makes his journey northwardly, but as soon as he takes his light southwardly he leaves me almost in Arctic gloom. I could not make a sidelight, being blocked up by buildings on either side; I am partial to side-lights.

Now I propose putting up a skylight in the south slope of the roof, as given in the drawing. My room is 46 feet in length, by 18 feet 8 inches in width; and I intend making the skylight 12 × 15 feet in size, raised a few inches above the surface of the roof, at an

angle of forty-five degrees; the lower end at the eave and the upper at the comb; height from the floor to the eave, 9½ feet; from the floor to the comb, 17 feet. There are three windows, 4 × 7½ feet in size immediately below the lower edge of the skylight. Now, sir, I want your advice with respect to the above model; also, what color is best for the sides of an operating room?

Yours, truly, D. B.

LIBERTY, Ind., Oct, 12th.

[The new arrangement will be an improvement. The best coloring for the sides and ceiling is probably an ultramarine distemper.]—ED.

MOUNTING PHOTOGRAPHS—M. H. KIMBALL'S PLAN.

THE mounting of card photographs, these thrifty days of the art, has now become a very considerable part of the photographer's daily routine. Card trimming and mounting consumes as much time of hand labor as any other branch of the business. Any device, therefore, which can abridge the time or labor or effect better work, may be an assistance to every one. This Journal which makes an effort to present as early as possible the current novelties, has now the good fortune to make the first publication of a new device for mounting, which it is believed will be adopted at once in many establishments. As an introduction to the invention of Mr. Kimball, which pertains only to the pasting and attaching to the card, we will describe the most approved method of

Trimming the Print.—For this purpose there is needed a glass plate of the desired form and size of the print, a good penknife, and a thick sheet of plate glass, six inches or more square. The sides should be exactly vertical. This form need not be of plate glass, and it is even better that it should be slightly curved, so that when laid on the print, concave side down, the end edges will first fasten the paper, and by gentle pressure on the middle the whole surface of the glass will be in contact with the paper. The blade of the knife should be thin and of high temper. The operation of trimming consist in laying the print down, impression up, on the plate glass, upon this the glass form, and then cutting away

the paper protruding from the form. The cut should be made with a free hand, each cut taking away the whole of the paper from one side. With care this apparatus may last years. If from carelessness, however, the edges of the glass become nicked, it is useless, and a new one must be procured. These glasses may be obtained from the photographic dealers. The print thus trimmed is ready for toning. (We take it for granted that intelligent operators understand that prints should be trimmed before toning, in order to save the silver from the paper clippings.) Prints are also trimmed, and more expeditiously, by means of a steel cutting die; of this plan more in future. The trimmed prints toned and dried are ready for

Kimball's Improvement in Mounting.—Procure a block of wood a trifle smaller than the desired size of print, and about three-quarters of an inch thick; through the center of this block drive a long nail, so that the head shall be flush with the surface. Next cement with sealing wax upon the top of the block a glass plate of a size a trifle larger than the block. The top of the table on which the block is used is pierced with gimlet holes, at convenient places into which the nail of the block fits, thus keeping it snug in its place. For use, the block is set in one of these holes; a piece of cotton muslin of two thicknesses is dipped into a tumbler of water, gently squeezed, and laid on top of the glass. Upon the wet cloth the print is laid, impression down, and the paste (Mr. Kimball uses gum arabic) is laid on with a broad, flat brush. The cloth needs to be constantly damp, but a wetting for about each two dozen prints is found to be sufficient. If the prints are not thoroughly dried after toning, the cloth need not be dampened so often. After pasting, the prints are attached to the cards in the usual way. The effect of the damp cloth is to make the paper flatten out under the paste, and to prevent the cockling of the card on drying. By having the glass plate only the size of the print, the paste is not wasted, and makes no mess, and there is little danger of its getting on the surface of the print.

Mr. Kimball, who generously through us offers his plan to the profession, has thoroughly demonstrated its utility. In his establishment he has often had cards mounted at the rate of twenty dozen per hour.

In our next, we will be permitted to describe the plan of mounting used in one of the largest galleries in the interior of the State.

IODIDE OF SILVER IN COLLODION.

BY M. MC-A GAUDIN.

We may introduce as much iodide of silver in suspension into collodion as we think proper, *without fear of fogging the pictures by leaving the collodion in the light, or in pouring the collodion on to the plates in the open air.* The presence of the iodide in solution in collodion renders this iodide of silver absolutely insensible to luminous radiation, and is therefore an excellent means of augmenting the porosity of the collodion which remains opaline after being filtered through the most compact cotton. I have not yet satisfied myself if the collodion gains in sensibility; and here perhaps an obstacle presents itself. Sensitized collodion is as impenetrable to actinic rays as orange yellow glass, although its hue is much paler; in this particular it is superior to bright yellow paper, so that in reality sensitized collodion is attacked by a strong light only, at its surface on account of its particles; it is on this account that there will be more advantage in introducing some bromide, chloride, or cyanide of silver, which are perfectly white, into the collodion, than in introducing iodide of silver in suspension, so that the perfection of collodion will very probably come to consist in a combination which will admit of a soluble iodide in very minute proportions, sufficient only to guarantee the argentiferous compound in suspension from every attack of light, and to form at the moment of its sensitizing the iodide of silver necessary to commence the attack under the influence of the least actinic action.—*La Lumiere.*

LACTATE OF SILVER FOR THE BATH, AND LACTATE OF IRON FOR THE DEVELOPING SOLUTION.

BY M. MC-A GAUDIN.

I at first prepared lactate of silver, by the action of lactic acid upon oxide of silver, but did not succeed by this method, as it was a black mud, of which it was impossible to make any use. I succeeded better by making lactic acid react upon *carbonate of silver.*

After filtration through paper, we obtain a yellow liquid with excess of lactic acid, but this bath is much too reducible; it must be largely acidulated with nitric acid; even by using this corrective we do not attain to the sensibility of the ordinary nitrate of silver bath, which I had hoped to be able to surpass. But this bath of lactate of silver possesses a peculiar property; it can be employed very *weak*, without letting the sensitive film detract itself from the plate, as with the ordinary nitrate of silver bath, under the same circumstances; and moreover, *it does not dissolve the iodide of silver;* so that there is no fear of its forming spots, in consequence of its concentration by evaporation, as always occurs with the bath of nitrate of silver, however short a time the sensitized plate remains in the slide. With this lactate bath, the sensitized plate may probably remain out of the bath an hour without injury. This, however, remains to be proved. On the other hand, lactate of silver is constantly undergoing modification with time. At the end of four-and-twenty hours, it becomes of an intense yellow color, and requires a fresh addition of nitric acid to work with.

As to the lactate of iron for a developer, it requires an addition of sulphuric acid to fit it for use. The negatives it yields are exceedingly fine, analogous to those obtained through pyrogallic acid; they are blue by reflected light, and red by transparency, like those developed by proto-acetate of iron, but the whites never come pure.—*La Lumiere.*

ANOTHER QUACK PROCESS—VENDER CAUGHT IN THE ACT.—HOW MR. OUTIS SAVES 70 PER CENT. IN SILVER, AND 30 PER CENT. IN GOLD.

On page 192, we reproduced the whole of a new humbug circular which came into our possession through the kindness of subscribers. The circular is without date or signature,—an interesting fact. We sent for the process by the underground mail route, and it reached us promptly. The following is a literal copy :—

Directions for Mixing Silver Solution.—Take 10 ozs. of pure soft water, and 250 grs. nitrate of silver, also 3 grs. nitrate ammonia, to every oz. of solution- Filter before using. Then float the paper four minutes; hang it up in a dark room to dry. Have a box of

eighteen by thirty-six inches, perfectly air tight; convert one side into a door; place the box in an upright position. Take 1 pint of acqua ammonia, put it in a wide-mouthed bottle with glass stopper; place the bottle at the bottom of the box, after the paper is dry put it in the top of the box, then remove the stopper, and let remain ten minutes, then take it out and it is ready for use.

Toning Solution.—Take 15 grains of gold to 8 ozs. of soft water, use 1 oz. of gold water to every 4 ozs. of water. Wash the prints well before toning. This you will find will give you a saving of 70 per cent. in silver, and 30 in gold.

Editorial Department.

Obituary.—On Saturday, October 31, after a short illness, Henry Fitz, aged fifty-five years.

Mr. Fitz was born in Newburyport, Mass. The Fitz family came to this city in 1818. For the first few years of his residence in this city, Mr. Fitz assisted his father in the publication of a religious paper. Subsequently he learned the trade of a locksmith, and in the business promised to attain eminence. About twenty-five years since he became interested in Astronomy and Optical Instruments, and from that time since has been chiefly occupied in the manufacture of telescopes. At the advent of the Daguerreotype, he took a deep interest in the new art; and for some years it engaged a considerable share of his attention. He learned the details of the art from Messrs. Wolcott and Johnson, and in 1840 he opened a gallery in Baltimore, and kept it in successful operation for about two years, when he returned to New York, and gave his undivided attention to telescopes. As a practical optician in his department he soon became recognised as the most skillful in the country. His telescopes, of which he has made hundreds, are now in use all over the United States, and some in foreign lands. The largest telescope which Mr. Fitz had completed is now in the city of Buffalo; the object glass has an aperture of sixteen inches. Lately he was employed on a 24-inch glass, and it is hoped that the work is so far progressed that it may be completed by other hands. The Buffalo instrument is now the largest telescope in America, and the 24-inch will be the largest in the world. Mr. Fitz was always interested in photography; he has made many photographic cameras, and was the instructor of Mr. C. C. Harrison and some others who have become celebrated for excellent work. He was one of the founders of the Photographical Society, and has been one of its faithful friends. Recently he had been engaged in perfecting a new photographic lens, similar to the Globe lens Several of the lenses are now in use, and a description of their novelty is on file at the patent office.

Mr. Fitz attended the last meeting of the Photographical Society. He was confined to his house by the fatal illness only about one week.

———One of the interesting applications of photography which lately seems to have come into fashion, is the multiplication of pencil and pen and ink sketches.

The change to a silver print is a great improvement in the brilliancy of the picture and the alteration of size is often a great desideratum which photography alone can accomplish. Instead of becoming a substitute for, or an impediment to the art of drawing, photography thus promises to be an important stimulant. Every photographer who has any skill in drawing, knowing his ability to be a publisher, ought to be encouraged to try his skill for the public. These remarks are made on occasion of having before us some of these reproductions of the original work of some of the well known amateur artists.

——Will Mr. E. L. Mowrey, or some of his friends, inform us where a letter may be addressed to him.

Minor Correspondence.

J.A.E., of Iowa.—"Will you please oblige me and probably some of the rest of your readers, by answering through the Journal the following questions :— 1. What is the best work on photographic chemistry? 2. How many grains of chloride of gold will one gold dollar make? 3. What are the names of the best French and German journals of photography, and of whom, and for what price can they be had?" .... 1. Hardwich. 2. About forty. 3. Bulletin Belge de la Photographie, Brussels; semi-monthly, $1 50. Le Moniteur de la Photographie; semi-monthly, $4, Paris. Bulletin de la Societe Francaise de Photographie; monthly; $3, Paris. La Lumiere; semi-monthly; $3 25, Paris. Revue Photographique; monthly $2, Paris. Photographisches Archiv; monthly; $2, Berlin, Germany. Photographisches Journal; semi-monthly; $4, Leipsic. Photographisches Monatschefte; monthly; $1 25, Brunswick. These rates are in gold. No agents in America. The payment in gold may be made by mail to the publishers.

J. P. W., of Ill.—"Would not Mr. Bogardus's light be as good by dispensing with his white ground glass, and using only one thickness of a blue ground glass? And if so, at what cost could it be procured?" ....One thickness of ground blue glass would no doubt be preferable. The cost of the cheaper sort should not exceed 75 cts per square foot. We think it an error to use any ground glass, unless it is movable.

E. J. H., of Oo.—For plain paper: *Salting*, 1 or 2 grains of salt to the ounce of water. *Sensitising*, ammonia-nitrate at a strength of 40 grains to the ounce of water. We have found no advantage in stronger solutions. Ammonia-nitrate at 120 grains to the ounce is quite beyond our experience. The formula above will suit your case.

E. J. E., of Conn.—The best transparencies for the magic lantern are made by the albumen process. The process is not so easy as the collodion.

R. S. L., of Mich.—In this city very little distilled water is used by photographers. The Croton water, except for matter held in suspension and which may be easily filtered, is pure enough. In districts where the water is ferrugenous or sulphury, photographers have much trouble. Small quantities of hard water may be purified for the bath, by adding 2 or 3 grs. of nitrate of silver to the quart and setting in the light till clear.

C. N., of O.—If the chemical and visual focus of your camera do not agree, the lenses are not properly achromatized. With a truly achromatic lens these foci always coincide. In a blue light, it would not be necessary to use an achromatic lens. When it becomes the fashion to glaze the operating room with blue glass, perhaps achromatic lenses will go out of use; and in such case the lenses would be much cheaper and the work much more perfect.

Geo. A. Chapman, 78 Duane St., New York.

MANUFACTURER, IMPORTER & DEALER

IN EVERY DESCRIPTION OF

DAGUERREOTYPE, AMBROTYPE,

AND

Photographic Materials.

Chapman's Saxe Albumen Paper.

Appreciating the necessity which exists for operators to have a fine article of paper, I am paying particular attention to this branch of the business, and can assure both dealers and operators that I am producing, and am prepared to supply them with an article unequaled in the market.

Chapman's Cameras.

I will warrant all my Cameras to give the most perfect satisfaction, and will refund the money where they do not.

Price List of Cameras.

			Plain.	With central stops
1-4 size	Tube and	Lense,	$15 00	$18 00
1-3	do	do	20 00	23 00
1-2	do	do	25 00	30 00
Extra 1-2	do	do	28 00	33 00
4-4	do	do	45 00	50 00
Extra 4-4	do	do	80 00	85 00
8-4	do	do	———	130 00

The 1-4, 1-3 and 1-2 size Cameras can be furnished in matched pairs of exactly the same length focus for Cartes de Visite and Stereoscopic pictures, without extra charge.

Chapman's O. K. Iron Plates.

I warrant these Plates to be superior to *most*, and equal to *any* plates ever yet introduced. I submit the following prices, which are from 15 to 30 per cent. lower than other makes.

1-9 size, per 8 doz. boxes, $ 75 — 1-4 size, per 8 doz. boxes, $2 00
1-6 do. 8 do. 1 25 — 1-2 do. 4 do. 2 75
4-4 size, per 2 doz. boxes, $4 00

At the above prices it is considerably cheaper to use plates than glass.

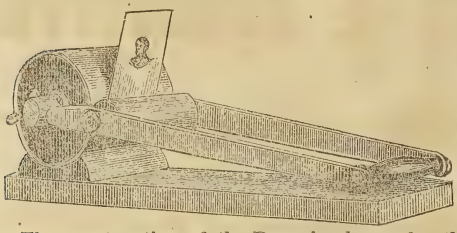
☞ **A liberal discount to Dealers, both on Cameras and Plates.**

GEO. A. CHAPMAN.

COLEMAN SELLERS' PATENT PRESS

FOR

CARD PICTURES & STEREOSCOPIC SLIDES.



. The subscribers, having been appointed Sole Agents for the manufacture and sale of the above Presses, desire to call the attention of professional and amateur Photographers to their merits. These consist in their cheapness, perfect ease of working, freedom from liability to get out of repair, and the excellence of their work.

The construction of the Press is shown by the accompanying wood cut. The polishing, or glazing, is effected by the small roller, and the necessary pressure is obtained by means of the screws attached to the ends of the lever that are passed through the journal of the large roll.

Price of 4-inch Press..... $15 00
" 9½ " 30 00

E. & H. T. ANTHONY, Sole Manufacturers,

No. 501 Broadway, New York.

THE "COMETLESS COLLODION BOTTLE,"

HERMETICALLY STOPPED.

In presenting the above bottle to the notice of Photographers, we are desirous of pointing out some of its advantages over every other kind of Collodion Bottle now in use, this having been designed expressly do fill up a requirement long felt in the Operating Room.

First, its great economy, it being almost impossible to spill the Collodion in pouring back from the plate, any which might flow over the spout being received into the bottle through the air-hole C; it also prevents that almost imperceptible evaporation which always more or less takes place in every other form of bottle. Secondly, its great cleanliness in preventing the Collodion drying around the spout, and small particles falling on to the plate, while coating or going back into the bottle. there being partially re-dissolved, and so producing stains on a subsequent plate, Thirdly, its expedition in saving the time others take up in requiring to be continually clean, this requiring to be cleaned but once a day, even in the hottest weather; it also keeps the Collodion in a peculiarly limpid and free condition, making it give a smooth even film, so desirable for the production of good pictures. In fact we confidently believe the "Cometless Collodion Bottle" to be the most perfect *sine qua non* of the Operating Room. One day's trial will fully bear out all which has been said respecting it.

No. 1..... 2 ounce..... $1 00
" 4..... 4 " 1 25
" 6..... 6 " 1 50

COLLODION FILTER.

This apparatus, indispensable to every Photographer who desires to make unblemished negatives, can be obtained of the subscribers. It is so constructed that any quantity of Collodion can be filtered without loss from the escape of the ether and alcohol.

Price of 6-ounce Filter..... $2 50

EDWARD & HENRY T. ANTHONY,

No. 501 BROADWAY, NEW YORK.

Manufacturers and Importers of Photographic Materials of every description.

Pure Photographic Chemicals.

SEELY & BOLTWOOD,

CHEMISTS,

No. 244 CANAL STREET, NEW YORK,

MANUFACTURE THE

VARIOUS CHEMICALS

USED BY PHOTOGRAPHERS,

Of the best materials, and according to the most approved processes. Their Chemicals have the highest repute among the most successful artists, and are commonly recognized as the **Standard,** for the most desirable qualities of **Uniformity, Reliability and Purity.** Their celebrated

PHOTOGRAPHIC COLLODION

Is unsurpassed for the **Harmony, Delicacy and Strength** of the negatives which it invariably gives under the usual treatment. The great excellency of the Collodion is mainly due to the **Gun Cotton,** and the **Pure Iodides and Bromides** which enter into its composition, as well as to the recipe after which it is manufactured.

In addition to their stock of chemicals, the subscribers are constantly supplied with the very best **Photographic Paper,** plain and albumenized. Orders should be addressed,

SEELY & BOLTWOOD,

CHEMISTS,

244 Canal Street, New York.

Ferrotype Plates--Egg-Shell & Glossy.

V. M. GRISWOLD,

Patentee and Sole Manufacturer,

442 Broadway, New York, and Lancaster, O.

These plates are now admitted, by disinterested parties, to be

THE ONLY PERFECTLY RELIABLE IRON PLATES.

the *very best* materials are used in their manufacture, (notwithstanding the extraordinary advance in prices during the past year,) upon a formula modified and materially improved since the issuing of letters patent. **ROUGH IRON** and **BENZINE VARNISH,** (the two principle constituents of the cheap imitations of the Ferrotype Plates, with which the country has lately been flooded, to the annoyance and loss of confiding purchasers,) have been found to be **Wholly Unfit** for purposes of positive photography. I have abundant evidence before me that these abortions have about *had their day.*

The public is more clamorous than ever for the Ferrotype Plates!

They are the SINE QUA NON, in the estimation of the numerous experts who are familiar with them.

There is scarcely an ambrotypist or photographer in the country who has not heard, or beheld in glaring capitals, this sentence:

"Warranted equal to the Ferrotype Plates!"

Indeed, this phrase has become stereotyped in the mouths of persons who have something to recommend as a substitute for my plates. What does it mean? Does it not *slightly* indicate that the Ferrotype Plates are held in the **HIGHEST ESTIMATION**, not only by the photographic fraternity, but even by the makers and venders of *would-be* rival plates? Does it not indicate further that my plates represent the standard desirable to attain, in order to win the **substantial favors** of consumers? I, therefore, **solicit your orders,** confident that you will find my plates, on trial, to justify the assumptions herein set forth.

For the benefit of persons not yet acquainted with the merits of my plates, I will name some of their points of superiority:

1st. Excellence of the materials used in their manufacture. **2d. Perfect. Cleanliness** of the plates from newly opened boxes. **3d. Beauty of Surface. 4th. Ease of Manipulation. 5th. Quick-working qualities. 6th. Safety and Satisfaction** in their use. **7th. Susceptibility of being used Repeatedly,** with uniformly good results. **8th. Adaptibility to all latitudes.**

My plates are all guaranteed, and are sold at prices, by the single box, which make them, considering their excellence, the **Cheapest Plates in Market,** as follows:

Light.		Heavy.	
1-9 per box of 8 doz...	$1.25	1-4 per box of 8 doz...	$3.50
1-6 " " ...	2.00	1-2 " 4 ...	4.50
1-4 " " ...	3.00	4-4 " " ...	10.00

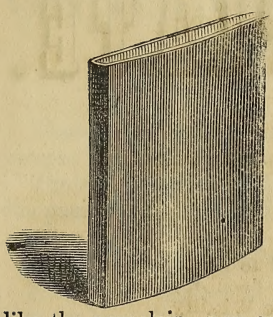
Stock Dealers will be allowed a liberal discount from the above prices, Where $10 worth of plates are ordered at one time, I will make no charge for collection by Express Co. On receipt of fifteen cents in postage stamps, I will forward sample plates by mail. Orders addressed to

V. M. GRISWOLD,

442 Broadway, N. Y., and Lancaster, O.

MATHIOT'S PATENT

Photographic Ware Baths,



Made expressly for the purpose of holding strong acid and silver solutions. They can be had of five different sizes. They are found to possess every qualification that can be called for, besides innumerable advantages over any other in use.

They hold the least quantity of solution, being made very thin. They will not burst and let out the silver solution like the gutta percha bath. They will not turn the solution black, as will the rubber bath. They will not check like the porcelain, nor crack from changes of temperature like the glass baths. They are entirely impervious to all acids, will withstand all atmospheric changes, are made by a scientific man on scientific principles, and will last a lifetime. Is anything more required of a bath?

DISHES! DISHES! DISHES!

The Photographic Ware Baths have such a popularity that the manufacturers, in order to oblige numerous customers, got up their new style of

PHOTOGRAPHIC WARE DISHES.

Since their first introduction, a year since, the demand for these popular Dishes has been very large. Their advantages are patent. They will not crack or check, and they are entirely impervious to all acid solutions. They are very strong, and will last for years. Do not fail to order them.

Extract from the London "Dictionary of Photography," (by Thoms Sutton, Esq., the Editor of "Photographic Notes,") page 131:

* * * * "Porcelain Baths are very objectionable, as nitrate of silver acts on the glaze. There is a substance used in America for baths and dishes called PHOTOGRAPHIC WARE, which resembles WEDGEWOOD WARE, and has no glaze; this answers the purpose admirably.

Extract from the "British Journal of Photography."

* * * * "We have used porcelain, white earthenware, and glass Baths. The first and last met the general approval except in the quality of high price. We were the first to abandon gutta percha. At present, the most popular Bath is known as the Photographic Ware, an invention of George Mathiot.

FOR SALE BY ALL STOCK DEALERS.

THE

SIDERION PLATE.

This new iron plate is believed to be

THE VERY BEST EVER OFFERED TO PHOTOGRAPHERS;

And in view of its good qualities, is without doubt

THE CHEAPEST.

PRICES.

1-9	$1 00
1-6	1 50
1-4	2 50
1-2	3 50
4-4	5 00

These Plates require NO CLEANING.

PROF. SEELY'S GREAT DISCOVERY.

It has already been stated in this Journal that the Editor and Proprietor, Prof. Seely, has made a valuable discovery in Photography, which effects a saving of a large portion of the silver and gold, and renders the manipulation more simple and easy.

The invention has been purchased by the subscribers, a patent has been applied for, the details of the process has been perfected in practice, and we are now prepared to issue Licenses to Photographers at a price which is merely nominal, when compared with the value of the improvement.

The following letters explain the advantages of the process:

LETTER FROM PROFESSOR SEELY.

Messrs. T. W. Cowdin & Co.

Gentlemen:—The chief advantages of my new printing process are as follows:

1st. A saving of silver. I have made first class prints with a solution of our new salt of silver at a strength equivalent to a solution of 10 grains of nitrate of silver to 1 oz. of water. A solution at the rate of 20 to 25 grains to the oz. is, however, to be considered the standard for ordinary work. It is not desirable to use a stronger solution.

2d. The facility of toning. It is my belief that any albumen paper of good surface and strength will present no difficulty in toning. Paper is successfully used with this process, which is totally unfit for the ordinary process.

3d. Simplicity of manipulation. The process materially changes the ordinary methods of manipulation, and all these changes are in the direction of saving of time and labor.

I am very respectfully yours, &c.,

CHARLES A. SEELY.

LETTER FROM MR. KUHNS.

Gentlemen:—I have thoroughly tried Professor Seely's new process for silvering photographic paper, and find that it saves from one-half to two-thirds of the silver required by any other process.

It makes the very best prints, and of much more uniform quality than those prepared in any other way. It is more simple than any other process, and the paper can be kept after silvering before use much longer than if silvered by any other method. *I am satisfied that it is the invention of the age.* In the toning bath, for prints, silvered by Professor Seely's new process, only one quarter of the gold ordinarily used is required. I can make pictures of any color by this process easier than by any other.

W. J. KUHNS.

Individual and Gallery Licenses for the whole 17 years, with plain directions for working, will be forwarded on the receipt of five dollars.

As the directions will be protected by the copy-right law, they cannot be published or copied. Address

T. W. COWDIN & CO.,

36 BEEKMAN STREET, NEW YORK.